

**RESPONSE TO UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
JUNE 26, 2006 COMMENTS ON THE
DETAILED ALTERNATIVES ANALYSIS AND RECOMMENDED CONTROL PLAN**

**Combined Sewer Overflow Long Term Control Plan
City of Rock Island, Illinois
July 27, 2006**

Comment:

Section 2.1

Section 2.1 notes that one of the City's two goals is to eliminate or relocate outfalls to sensitive areas. Elimination/relocation of Outfalls 003-006 and 007 are discussed. However, no alternatives are provided that eliminate or relocate Outfalls 011 and 012, in fact one alternative (8b under Table 3-1) actually increases treated overflows. The City had determined that 011 and 012 do discharge to sensitive areas. In an August 18, 2004, letter regarding the City's Outfall Elimination or Relocation Technical Memorandum of June 30, 2004, U.S. EPA noted that "[d]uring the alternatives evaluation phase, U.S. EPA will require the City to explain why it is not physically possible and economically achievable to eliminate or relocate Outfalls 011 and 012...." In a September 8, 2004, letter, the City responded that "[t]he cost to eliminate these locations is anticipated to be prohibitive," and "[a]n alternative to eliminating all discharges with respect to the available hydrologic record will be presented with costs in the LTCP." Elimination or relocation of Outfalls 011 and 012 are not discussed in this report. Alternative 8a under Table 3-1 would appear to be modifiable to provide for elimination/relocation of 011 and 012. The City should consider modification of Alternative 8a, or develop an additional control alternative that eliminates/relocates Outfalls 011 and 012, along with cost estimates, and submitted for agency review.

Response:

Though not specifically called for in the Consent Decree, Outfalls 011 and 012 were analyzed during the Outfall Elimination or Relocation Technical Memorandum as part of good engineering and planning practice. Even though the citizen's committee identified the areas that the storage/treatment basins discharge to as sensitive, they also concurred with continued, infrequent treated discharges from the basins in compliance with the City's permit. In order to address USEPA's concerns, the City has created a new Alternative, called Alternative 8e, which will eliminate treated discharges from Outfalls 011 and 012. This alternative is similar to Alternative 8c. The details for this Alternative are listed below.

Alternative 8e involves constructing new pump stations by the Franciscan and Saukie storage/treatment tanks to divert all wet weather flow to the 72" portion of the south interceptor via a new force main relief sewer. With this alternative CSO 007 would be completely eliminated, not relocated, and Outfalls 011 and 012 would be eliminated. Because of the excess flow that would be delivered to the WWTP through the new relief sewer, the pumping, screening, and disinfection facilities that must be built at the WWTP as part of the chosen northside alternative would have to be further upgraded. The key components of Alternative 8e are listed below:

Conveyance

- upgraded Franciscan pumps, 3.6 MGD to 18.6 MGD
- 11,520' of new 36" force main from Franciscan to south interceptor
- upgraded Saukie pumps, 3.6 MGD to 13.6 MGD
- 6,210' of new 24" force main from Saukie to Franciscan
- Cost: \$6.0 million

Treatment at Mill Street WWTP

- 32 MGD of additional pumping, screening, and disinfection at WWTP
- Cost: \$2.7 million

TOTAL COST: \$8.7 million (+50/-30%)

Alternative	Advantages	Disadvantages	Screening Result
8e New Relief Sewer from Saukie & Franciscan to Eliminate CSOs 007, 011, and 012	<ul style="list-style-type: none"> • CSO 007 is eliminated. • CSOs 011 and 012 are eliminated. 	<ul style="list-style-type: none"> • <i>Construction cost is over 20% more than second lowest cost alternative.</i> • Significant construction disruption from new sewer running through a number of neighborhoods for a long distance. • Long-term maintenance costs for two new pump stations. 	ELIMINATED

Comment:

Sections 3.0, 4.0

All of the alternatives for the north side, with the exception of separation, effectively consist of transport and enhanced primary treatment or enhanced primary treatment, and remote ballasted flocculation. None of the alternatives include storage with subsequent full or partial increments of secondary treatment.

Response:

Storage was incorporated into the high rate primary treatment facilities proposed for all Northside alternatives at Outfall 001 (the WWTP). Each proposed treatment facility would operate as a storage basin until all of the storage capacity is filled, at which point it would start operating as a primary clarifier. After an event, the stored wastewater will be drained to the WWTP headworks for full secondary treatment.

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Comment:

Table 4-1 (1)

In the last page of Table 4-1, the average annual TSS and BOD reductions for the Northside alternatives are listed. How were these calculated? They seem very low, especially for TSS. Also, Table 4-2 does not provide the equivalent information for the South side alternatives.

Response:

The pollutant reductions listed for the northside are actually city-wide pollutant reductions. They were calculated assuming that Alternative 6B was selected for the southside.

The calculation of the pollutant loadings included WWTP effluent, CSOs, and stormwater. WWTP effluent concentrations were determined from the City treatment plant records. Pollutant concentrations in CSOs were determined from WWTP influent records from when the influent flow was 16 MGD or greater (i.e. when a CSO was occurring). Stormwater pollutant concentration data was determined from a number of studies of stormwater in urban areas. The pollutant reductions from the proposed controls were taken from published data on typical reduction rates for such controls. Volumes of each type of flow were determined from WWTP records and the SWMM STORAGE/TREATMENT model.

Comment:

Table 4-1 (2)

"Cost benefit" is a line item in Table 4-1 for the north side. The \$/CFU (Bacteria) Removed, \$/Pound of TSS Removed, and \$/Pound of BOD Removed, are noted for each alternative. Paragraph 5(d) of Appendix A of the Consent Decree requires this. It also requires that "[t]he detailed evaluation, shall be performed utilizing the guidance presented in 'alternatives analyses' portion of U.S. EPA's Combined Sewer Overflows Guidance for Long-Term Control Plan." Section 3.4.3 of the Guidance discusses the use of cost/performance evaluations. Cost/performance analysis is used as a factor in determining level of control. An alternative's costs are compared over a range of design conditions (e.g., 0, 1 to 3, 4 to 7, and 8 to 12 overflows per typical year) to determine where the cost per unit increase begins to rise dramatically. The point where the incremental change in cost per change in performance changes most rapidly is known as the knee of the curve. The City has not performed cost/performance analysis to determine how cost effective the proposed or increased levels of control are.

Response:

Section 3.4.3 of the USEPA's Combined Sewer Overflows Guidance for Long-Term Control Plan states that "one of the traditional methods for evaluating engineering alternatives is by constructing cost/performance curves." It does not state that this is the only or preferred method. The city has completed the second evaluation method discussed in this section by comparing "a range of control alternatives for a given design condition." The City's given design condition is compliance with the presumption approach. The selected alternative provides

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about the same or better pollutant reduction than the other alternatives for a lower cost. Since this is clearly evident from the data shown in Table 4-1, we did not feel that it was necessary to show it on a figure.

Comment:

Section 5.3.1

Section 5.3.1 discusses the water quality benefits that the City expects to achieve with the recommended plan for the north side. Again, the expected benefits in terms of pollutant loadings (3% TSS, 12% BOD, and 18% fecal coliform) appear to be low. How can the fecal coliform load be reduced by 87% over the recreational season on an average annual basis and only 18% on an average annual basis?

Response:

While 43% of the City's flow volume (treated wastewater, CSO, and stormwater) is produced in the non-recreation season, 83% of its fecal coliform load is produced during this part of the year. This is because the City is not required to disinfect its discharges in the non-recreation season. Consequently, the significant fecal coliform load reduction expected during the recreation season will have a small impact on the total annual fecal coliform load.

Comment:

Question about May 26, 2006 Post-Construction Monitoring Program Letter Submitted by the City

This question relates to the City's May 26, 2006 submission: "Response to United States Environmental Protection Agency April 20, 2006 Comments on the Post-Construction Monitoring Plan and Appendix". While not directly related to the City's Detailed Alternative Analysis and Recommended Control Plan, the City's May 26, 2006 letter states that the proposed remedies for Outfall 001 are expected to result in an average of 1.6 overflows per year with a maximum of 5 in one year occurring approximately once every 27.5 years, as shown in Table 1 of the May 26th letter. It is not clear to U.S. EPA how these figures were derived; please provide an explanation for how these overflow targets were determined.

Response:

The City's goal is to comply with the USEPA presumption approach. As such, it needs to provide primary treatment and disinfection for all but a maximum of 6 overflows in any one year and an average of 4 overflows per year. In Rock Island, it is more difficult to ensure that no more than 6 overflows will occur in any given year than to achieve an average of 4 overflows per year. Facilities that prevent the City from having more than 6 overflows in any year reduce the average number of overflows to less than 2 per year. At the precision level the City was using to size the recommended control facilities, a maximum of 5 overflows per year was the closest to 6 without going over that could be achieved for Alternative 3.